

THE 2015 TOP 10

WAYS FOR WOMEN TO DEAL WITH HAIR LOSS

Disclaimer: This document provides medical information of a general nature for the purposes of education. It should not be taken as specific individual medical advice as this cannot be supplied without a consultation and adjustments to suit an individual's own medical status. Seek medical advice specific to you before embarking on a hair maintenance programme.

It's a scary moment when you discover that you are losing your hair. Maybe you have been losing your hair for a while and maybe your loss is more recent but either way you have options.

YOUR OPTIONS FOR TREATMENT

Your options for dealing with hair loss are:

1. Do nothing.
2. Use some form of medical treatment. Best for preservation and slow regrowth.
3. Use some form of coverup. Topical concealers or hairpieces. For wigs and hairpieces I recommend Jo Muru at www.kivihair.co.nz or Jessica's Wig Salon at www.jessicaswigsalon.co.nz.
4. Undergo a hair transplant. Best for rapid results. Costs about \$3-15,000.

On to the Top 10 ways to deal with hair loss in women.

NUMBER ONE. GET AN ACCURATE DIAGNOSIS OF YOUR HAIR LOSS.

A medical check is number one for a reason. Your diagnosis and treatment plan have to be right from the start or you will be like so many women that I see or hear

from. You may get a cursory examination from a GP, a five minute consultation from a dermatologist, or expensive remedies from a naturopath's or one of the hair clinics with their eight month, \$3-4000 regimes. If so you will not have answers and all the while the hair loss continues.

It is usually best if your diagnosis comes from a doctor. It may sound arrogant but you will get the best advice this way. Make sure that the doctor you see is educated in female hair loss and interested in taking the time to know you and your condition. If that is your GP then great, otherwise request a referral to a dermatologist with an interest in hair loss. Or see me. You must get an accurate diagnosis.

Hair loss in women are much more complicated than in men where the vast majority is due to Male Pattern Hair Loss (MPHL). While Female Pattern Hair Loss (FPHL) is the most common cause of prolonged hair loss for women other possible causes are common and there can be more than one cause.

Treatment of hair loss in women has four components:

1. Block the mechanism by which the hair loss is occurring. This includes drug treatment or withdrawal, controlling diet and supplement intake.
2. Stop doing other things that are bad for your hair such as smoking, following a low protein diet or excessive hair styling/dyeing/drying which weathers the hair.
3. Maximising hair growth through other mechanisms such as topical minoxidil, red light therapy, skin needling and taking supplements which promote hair growth.
4. Considering cosmetic treatments like keratin fibres and thickening products.

Treatment needs to address every contributing factor and needs to be tailored to each woman's medical situation, age and life circumstances.

Causes can be divided into 3 groups:

1. Diffuse causes of hair loss. Most common. About 70% of sufferers will have hormonal or female pattern hair loss as the major cause of their problem. The second most common cause is telogen effluvium, the hair loss caused by shock, stress, some medication, pregnancy and inflammation. We will go into these conditions in more detail.

2. Patchy Hair Loss. Less common. These include alopecia areata (bald patches) as well as its rare variants alopecia totalis (loss of all head hair) and alopecia universalis (loss of all body hair). Also included in this group are traction alopecia due to hair clips and rollers as well as trichotillomania (uncontrollable pulling out of hair due to stress and anxiety). We will not discuss these (or the scarring forms of hair loss) any further in this article. These rare conditions require specific treatment and repeated medical consultations. Further information is available on the website.
3. Scarring alopecias. Rare and serious. These are medical emergencies that need prompt treatment. Further information is available on the website.

FEMALE PATTERN HAIR LOSS

THE CAUSE OF FPHL

Female Pattern Hair Loss (FPHL) is thought to usually occur as a result of damage to hair follicles caused by inflammation triggered by exposure to the hormone Dihydrotestosterone (DHT). DHT is derived from testosterone and we all have some DHT in our bodies, men and women. If the system is working normally hormone levels are normal and no hair loss occurs.

The sex hormones estrogen, testosterone and particularly DHT affect our hair. Estrogen stimulates hair growth on the head and suppresses hair growth elsewhere on the body (and also suppresses acne). Testosterone and the more potent DHT cause hair loss on the head, the growth of facial and body hair and acne.

We are all individuals but in general:

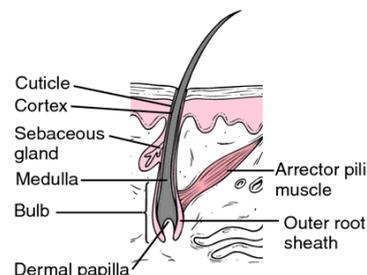
- men tend to have more of the testosterone effects while women tend to have more of the estrogen effects but there is overlap
- different parts of our bodies have different sensitivities to the effects of these hormones. If three women are exposed to excessive DHT one may get FPHL, one may break out in severe acne and the third may grow facial hair.
- we each have a different overall level of sensitivity to these hormones. Some get little effect from high hormone levels and some get severe effects from lower or "normal" levels. Women in general
- we all vary in the levels of each of these hormones in our bodies and in what substances we ingest that affect these levels.

I suspect you may now be starting to appreciate some of the complexity of hair loss. Does that mean there is more than one cause of FPHL. The answer is yes but one cause predominates.

Most cases of FPHL (and almost every case of acne) are probably due to diet⁽¹⁾. Modern diets full of processed carbohydrates cause a rise in DHT levels. It is called the endocrine effect of food and in tribal societies where no one eats any processed carbohydrates acne and FPHL is very very rare. How?

HAIR BIOLOGY

The average scalp has 100,000 hairs with a range of normal being between 50,000 to 150,000. Hair is the second fastest growing body tissue after the bone marrow. This is what makes the hair such a sensitive indicator of our general health.



Scalp coverage is determined by hair thickness as well as hair number and we all vary in the number and thickness of our hair and in how these change as we age.

90% of our hair follicles are actively growing hair (known as anagen hair). 10% of hair follicles are in a resting phase (known as telogen). The resting telogen hairs are sprinkled throughout the scalp at any one time. All hair follicles cycle between anagen and telogen. When they do the hair detaches from the bulb at the base of the follicle and sits loosely in the shaft, eventually falling out. This is the hair that comes out when we brush or dry our hair. If all is well a new hair soon starts to grow. We can normally lose up to 100 (some say 150) a day.

Illness, stress and some drugs (most famously chemotherapy) will push more follicles into telogen and shedding will increase. How many follicles recover depends on a person's nutritional and general health status as well as whether they have male or female pattern hair loss.

This cycling property of hair follicles also explains the initial shed some people get when they start a new treatment for hair loss. About 10% of our hair follicles are in the telogen stage and some will have old dead hairs still sitting loosely in the shaft.

If we then start a new treatment some of those telogen hairs will shift to anagen and sprout new hairs. The more the better. As these new hairs grow they push out those old dead hairs which we see on our pillow or bathroom floor. This is an excellent sign and the more dead hairs we see the better the treatment is working.

Unfortunately, unless we understand this we may think that things are getting worse not better especially because new hairs grow at about a centimetre a month so it takes a while before we see the regrowth.

1. High processed carbohydrate intake leads to a rapid rise in blood glucose.
2. The pancreas responds by pumping out insulin in order to force the muscle cells and fat cells to suck that glucose out of the blood.
3. Insulin also causes a brief surge in free testosterone levels in the blood. It does this suppressing the

testosterone carrier protein Sex Hormone Binding Globulin.

4. That excess free testosterone is rapidly converted to DHT.
5. DHT causes male and female pattern hair loss, acne and the growth of excess facial and body hair (in men and women). We all vary in which effects we are susceptible to as well as how severely we are affected. DHT's effect on the scalp hair follicle occurs as a result of the inflammation it provokes. This inflammation spreads slowly from hair follicle to hair follicle, shrinking them one by one. As the follicles shrink, the hairs growing out of them get thinner and thinner until the follicle shrinks so much it cannot produce any hair at all. So FPHL is characterised by fewer, thinner hairs.
6. DHT is not the only cause of inflammation and damage to hair follicles. The effects of nutrient deficiencies or the stress hormone cortisol also impact.
7. The body has a capacity to fight damage to the hair follicles and to repair existing damage.
8. Some hair loss treatments work through mechanisms that do not involve DHT. These include skin needling, light therapy and minoxidil.
9. The severity and speed of hair loss depends on the balance of the effects listed above as 5,6,7 and 8.

The effects of DHT on the sebaceous glands in the face is easy to switch off and on so acne responds rapidly to avoidance of the processed carbs. Hair follicles on the scalp which have been damaged by DHT are much harder to switch back on again with a simple dietary change, maybe impossible.

Currently MPHL and FPHL need to be considered chronic conditions. There is no current cure. At best we can halt progression (sometimes only slow progression) and regrow slowly. Treatment needs to be long term. And if you stop treatment you go back to losing your hair. Its not like a course of antibiotics that you take for a brief time but more like being on a blood pressure tablet.

Think about hair loss treatment as like brushing your teeth or showering every day. These are things that no-one did 100 years ago but we now do it for our health and appearance's sake. And we shave, dye our hair, wear nice clothes, apply fake tan, use sunscreen and go to the gym. So it's not that big a deal to also take some hair loss treatment.

Treatment of FPHL can be categorised into four classes:

1. Block the mechanism by which MPHL occurs. This includes finasteride (or dutasteride) and ketoconazole drug treatment, controlling the glycaemic index of your diet, normalising body fat and avoiding anabolic supplements.
2. Stop doing other things that are bad for your hair like smoking or following a low protein diet.
3. Doing other things which promote hair growth like topical minoxidil, red light therapy, skin needling and taking supplements which promote hair growth.
4. Using cosmetic treatments like keratin fibres and thickening products.

TELOGEN EFFLUVIUM

An effluvium is any sort of discharge, usually unpleasant. Think effluent. That pretty well sums up the unwelcome sudden loss of (usually large) amounts of hair that can occur as a result of a medical condition or some drugs.

The reason hair is such a sensitive indicator of our health is because it is very active and busy. Hair grows on average 1 cm a month or 0.3mm a day. For the average scalp with 100,000 hairs it means a total of about a kilometre of hair is produced each month.

The cells in the hair growing part of the follicle, the dermal papilla are very busy and metabolically active. Because they need to work at such a high capacity they need a constant high level supply of nutrients. When these are not present or if there are toxic drugs present the follicles shut down and stop growing hair. When follicles stop growing they automatically eject the hair they were growing and wait until conditions improve and they get a signal to reactivate and grow a new hair.

We recognise intuitively that a good head of hair is an indicator of health and vitality. This is why we admire and desire one for ourselves and our loved ones.

TYPES OF EFFLUVIUM

There are two types of effluvium, telogen and anagen. They relate to the two major parts of the hair growth cycle. Hair follicles do not constantly grow hair but cycle between anagen (hair growth phase) and telogen (resting phase). The longer the anagen part of the cycle the longer the hair.

We all vary in the length of the anagen part of our cycle and this is why some people can grow hair to their waist but others can only grow it to their shoulders. When anagen stops (either because it is programmed to stop or some insult has halted hair growth) the follicle enters telogen or the resting part of the cycle.

On the scalp follicles spend 90% of their time in anagen and 10% in telogen. In human beings each follicle follows its own cycle, unlike many animals whose coats grow in unison, growing a thick winter coat and shedding heavily in spring.

TELOGEN EFFLUVIUM (TE)

If nutrient levels are not high enough to sustain hair production a large number of active anagen hair follicles will switch into the resting telogen phase and that person will experience a large shed. The same thing will happen if the body experiences some sort of illness or trauma severe enough to divert nutrients from the hair. This stress can be acute or chronic.

An acute telogen effluvium is usually due to a sudden brief stress or temporary nutrient loss. A chronic telogen effluvium is due to some sort of chronic condition, which may be frustratingly difficult to diagnose. Telogen effluvium (TE) usually occurs diffusely over the scalp although some women may notice it more over the temples. If you look at the hair which has fallen out you will see a white bulb at the

base. In this way you can tell whether your hair loss is due to TE or hair breakage (no bulbs visible on broken hairs).

ANAGEN EFFLUVIUM

Very severe stresses will halt anagen so rapidly that the hair follicle does not have time to transform to telogen before the hair is ejected. The most common cause of anagen effluvium (AE) is chemotherapy and radiotherapy. It can occur in some poisonings. Hair loss is just a small part of the severe effects caused by these powerful compounds.

The cause of anagen effluvium is always obvious. Hair loss is sudden (more rapid than TE) and is usually total or nearly total, usually including eyebrows and body hair.

Studies are underway into whether scalp cooling with a cold helmet during chemotherapy and radiotherapy treatment will prevent or reduce AE. If the hair follicles are cold enough they will enter a form of "suspended animation" and not absorb the chemotherapy dose. The risk is that any cancer cells present in the scalp will not absorb the chemotherapy either. We await the results.

There are case reports suggesting it is possible to reduce or sometimes avoid the eyelash and eyebrow loss of chemotherapy by the use of bimatoprost. This topical treatment is most commonly used to lengthen eyelashes and thicken eyebrows as well as treat glaucoma.

CAUSES OF TELOGEN EFFLUVIUM

This can be difficult to diagnose. If the cause is only present for a brief period then the bout of TE will also be brief and the patient will recover. If the scalp is otherwise healthy the recovery will be full. If the patient also has male or female pattern hair loss, either known or undiagnosed, then recovery will be incomplete and hair loss will be ongoing.

Causes of TE include:

- Major illness
- Major trauma
- Significant surgery
- Significant weight loss, especially if the BMI falls below 20
- Iron deficiency
- After pregnancy
- Some vaccinations in susceptible individuals
- Drugs and medications in susceptible individuals (especially high dose vitamin A, commonly antihistamines)
- Chronic illness especially chronic inflammatory illness such as forms of arthritis or inflammatory bowel disease
- Acute or chronic stress
- Other vitamin or mineral deficiencies such as zinc
- Overactive or underactive thyroid
- Probably endocrine disrupting chemicals such as BPA and phthalates (mainly through their effect on thyroid hormone receptors)
- Possibly soy protein (another thyroid hormone receptor effect)

- Sometimes chronic herpes simplex infection is a cause (recurrent oral or genital herpes)

TREATMENT OF TELOGEN EFFLUVIUM

- Firstly if you are in a hole then stop digging. Try to establish why you are losing your hair.
- If it was an acute event like a large weight loss then it will take a while to recover, typically six months before you feel your hair is returning to normal (as long as you maintain a sensible diet in order to give your follicles the nutrients they need).
- If the loss is due to medication you will need to change your medicine.
- Get checked out for iron deficiency. Women with TE need to consistently get their ferritin measure of iron stores close to 70 (not the usual level of 20) in order to improve. This is essential.
- Have a blood test to check thyroid function.
- Adequate protein intake is important although remember whey protein and soy protein have negative hormonal effects on hair growth. Pea protein is best if you supplement with protein powder. A dose of one gram of protein per kilogram of body weight will usually accelerate hair regrowth.
- High dose omega three supplements will do the same (over 400mg DHA a day).
- Stop smoking if you smoke.
- A multivitamin and multi mineral directed towards hair growth will probably help. There are supplements for which there is some evidence that they may help hair growth. Zinc, biotin and silica in particular.
- A course of topical minoxidil treatment can accelerate recovery from acute TE.
- Using a 1.5mm needle roller on the scalp once a week will stimulate some follicles into the anagen phase.
- Work to lower the cortisol excess brought on by stress.
- Most people will have an obvious cause of their TE, respond to the above measures, and make a full recovery. If this is not you then start thinking about chronic causes of inflammation and stress. Combatting the TE brought on by chronic conditions can be extremely difficult.

Chronic TE is a very exasperating condition to manage. You can do everything well and then some new event, like an illness or recurrent iron deficiency, can occur and you are back to square one. If this is you and you find things have reverted to heavy shedding then start at the top of this section again and work your way down.

WHAT SHOULD YOUR CHECKUP INVOLVE?

- History and examination in order to get an exact diagnosis, if possible.
- A check of your iron. Your ferritin needs to be 70 not 20⁽²⁾.
- A check of your thyroid function.
- If you have symptoms of acne, excess body or facial hair or there is a question as to whether you may have insulin resistance you need your hormones and average blood glucose checked.
- If you could be at risk of early heart disease then this needs addressing

- Your medication and supplement history needs review. Some medications (especially antihistamines, some cholesterol lowering drugs and some osteoporosis treatments) are unfriendly to hair follicles and some women are on bioidentical testosterone or DHEA which will both convert to DHT. But the most common medication issue for women is hormonal contraception. On the next page is a list of hair friendly and hair unfriendly hormonal contraceptives. Check yours. The progestogen component may be either anti-androgenic or pro-androgenic. Pro-androgenic progestogens worsen hair loss and acne. If you are on one of these discuss with your doctor whether you can change it. Apart from ensuring optimum iron level this is the single biggest difference you will make to your hair.
- If you are on HRT make sure your doctor prescribes Oestradiol and Utrogestan (bioidentical progesterone) if you need it. Others are likely to be hair unfriendly.

With luck you now have a diagnosis, a list of the things you need to stop doing and a list of things you need to do in order to maximise your hair. Here is my list.

NUMBER TWO DON'T SMOKE or stop if you do.

Smokers lose hair faster and go grey quicker than nonsmokers. Fact. You are pretty much wasting your time treating hair loss if you continue to smoke.

I know, it's been fun and everything, but you know you need to stop one day:

- Smoking bad for your health.
- Smoking makes you lose your hair faster
- After the age of 30 smoking makes you look older.
- Men and women who lose their hair are at increased risk of sudden death from heart attack, a risk that is increased still further by smoking.

There is no single way to quit that works for everyone. Keep trying until you find the one that works for you:

- Stop cold turkey.
- You can cut down then stop cold turkey.
- Substitute nicotine gum, patches, lozenges, sprays or cigarettes for cigarettes and then wean off those. Free nicotine replacement is available via your own GP or QUITLINE 0800 778 778.
- Some people quit with the help of hypnosis or acupuncture.
- Your GP may be able to prescribe medication to help you quit.
- Some people get inspiration from reading Allan Carr's "Easy Way to Stop Smoking" available from major bookshops. He says that you are not really addicted to smoking, you just think that you are. He changes the way that you think about smoking so that you no longer want a cigarette.

We are all different so, whether you stop first try or take a few goes, one of these methods will eventually work you. If one method does not work first time don't give up. Cross it off and try another.

Ariana Huffington says "failure is not the opposite of success, it is a stepping stone to success."

NUMBER THREE HORMONAL THERAPY, when successful is the most potent FPHL therapy.

There is some degree of controversy in the hair loss world as to how many women with FPHL have either a DHT excess or excessive sensitivity to DHT ie are hormonally based. The following points need to be kept in mind when reading about FPHL:

- Most of what we see on the internet comes from the USA. Contrary to what you might think they do not always have the most modern drugs. Cyproterone, the most effective hormonal therapy for FPHL is not available there. This colours all the information on FPHL coming out of the States. People posting on the internet often have strong opinions so be aware that they may not be aware of all available therapies. In particular, those who only know a little about FPHL will simply state whether treatments are FDA approved or not rather than discuss the evidence around why one treatment may be better than another in particular circumstances.
- Most experience and protocols for hormonal FPHL are from Europe and not easily available in the English language.
- When successful hormonal therapy is the most potent FPHL treatment⁽³⁾.

Current drug therapy is mostly tailored towards combatting the "androgenic hormones" testosterone and DHT although there is also evidence that gently increasing oestrogen levels may help, either topical oestrogen or systemic.

You have options in your hormone manipulation:

A. THE PILL (premenopausal women)

Not just any pill because some forms of pill progestogen aggravate hair loss (see below). Your hair will be best off with a pill containing the progestogen cyproterone. Other good options are drospirinone or dienogest.

The oestrogen component of these pills will combat FPHL a little but the anti androgen (ie anti testosterone and anti DHT) effect of the cyproterone or other hair friendly progestogens will be more beneficial.

Like all pills there are side effects and there are some women who, because of their past history or family history, cannot take hair friendly contraception. The usual issues of nausea, irregular periods, preexisting liver disease or fluid retention occur with any pill. There is a possible small increase in breast cancer risk.

GOOD CONTRACEPTIVE BAD CONTRACEPTIVE

FRIENDLY TO HAIR OR NOT	PROGESTIN	PILL GENERATION	COMBINED PILL BRANDS	MINIPILL BRANDS	OTHER PRODUCTS	VTE RISK	ANDROGENICITY (how much it worsens acne or hair loss)
😞😞😞😞😞	levonorgestrel	2	Roxanne, Ava, Loette, Levlén, Microgynon, Monofeme, Nordette, Trifeme, Triphasil	Microlut	Jadelle implant Mirena IUD	3.6	highest
😞😞😞	norgestrel		Ovral				high
😞😞😞	gestodene	3	Femodene			5.6	high
😞	norethisterone ⁺	1	Norimin, Brevinor	Noriday		3.9	moderate
😄😞	medroxy progesterone acetate	1			Depo Provera injection		mixed/uncertain
😄	etonorgestrel	3			Implanon implant NuvaRing vaginal ring	7.3	lowish
😄	chlormadinone		Belara				lowish
😄	desogestrel	3	Marvelon, Mercilon	Cerazette		7.3	lowish
😄	nomegestrol acetate		Zoely				low
😄😄	norgestimate	2				5.9	very low
😄😄😄	dienogest*		Qlaira				anti-androgen
😄😄😄	drosperinone*	4	Yasmin, Yaz			6.3	anti-androgen
😄😄😄😄😄	cyproterone*		Dianne-35, Estelle, Ginet			6.8	most potent anti-androgen

*= especially useful to combat female pattern hair loss
 += least bad option of unfriendly progestogens

The major risk of what is called the combined pill (oestrogen plus progestogen) is risk of a blood clot:

- deep vein thrombosis (DVT) of the leg
- pulmonary embolism of the lung
- stroke
- possible heart attack

These pills are unsafe in those at risk of blood clots or with liver disease. These figures will help you understand their effect on DVT risk. Average risk of death from blood clot:

- healthy young woman 1 in 10,000
- pregnant woman 2 in 10,000
- 2nd generation pill 2 in 10,000
- 3rd generation pill 4 in 10,000
- cyproterone 7 in 10,000

The second generation pills are, in general, not friendly to hair. The third generation pills include drosperinone (Yasmin, Yaz) and dienogest (Qlaira). The most effective first line treatment for FPHL is cyproterone (Ginet) which is the most likely to promote a blood clot.

Every woman is different and the risks and benefits of hormonal contraceptives will balance out differently for each one.

B. SPIRONOLACTONE (pre and postmenopausal women)

Spironolactone is more commonly used to combat excessive facial and body hair but, because it acts as an antagonist to DHT and testosterone, it is also used to combat acne and FPHL. You will read about it on the

internet as it is used a lot in the USA. Those who try it notice less oily hair before they notice any hair regrowth.

Nausea is the most common side effect and the degree of nausea is what usually dictates the dose taken (25mg to up to 200mg). It is essential not to become pregnant while taking spironolactone as it will cause genital abnormalities in a male fetus. There is a question surrounding the risk of breast cancer with long term use. There is no definite evidence of increased risk but there is a possibility as there is an increased incidence of breast cancer in beagles on spironolactone. It is probably not a good option for those with a family history of breast cancer.

If you read up about Spironolactone on the internet you will hear about the risk of dehydration, low blood pressure, excessively high potassium and kidney failure. This is a real risk in the second group of patients who use spironolactone, those with heart failure. It is very common in that group but very very rare in women with normal kidney and heart function.

C. CYPROTERONE OR FLUTAMIDE (premenopausal women)

These more powerful antiandrogen drugs are used when the above treatments are not strong enough to control and reverse FPHL. They need to be taken with contraception as they cause birth defects. As stated above cyproterone, when it is able to be used, is considered the most effective treatment for FPHL with androgen excess or androgen sensitivity.

D. FINASTERIDE (postmenopausal women)

This is the most common hormonal treatment used by men. It has also been shown to be useful treatment of FPHL at a dose of 2.5mg a day. It is poorly effective in premenopausal women. It is very important not to become pregnant while taking this drug.

E. HRT (postmenopausal women)

Cyproterone and the contraceptive pill are not used in postmenopausal women for safety reasons. You and your doctor will need to decide if the risks of HRT are outweighed by the benefits in your case but topical and tablet oestrogen has been shown to be effective hormonal treatment for the postmenopausal woman. Care needs to be taken in choosing a hair friendly progestin. The bioidentical progesterone brand name Utrogestan is most hair friendly. Spironolactone and finasteride can be used as anti androgens in addition to HRT.

3. USE TOPICAL MINOXIDIL. A Pharmacy Only lotion applied to the scalp twice a day.

Points about minoxidil:

- It is the only FDA approved treatment for women. Some doctors will recommend minoxidil alone as medical treatment.
- It's a hassle to use and it will take you a while to get the hang of applying an even layer over the FPHL area. The liquid formulation usually leaves a bit of a greasy residue.
- Still minoxidil usually works well in women, giving more visibly rapid results than any other treatment. Minoxidil alone also works better in women than in men because of lower overall DHT levels.
- You will read on the internet that if you start minoxidil you will need to keep it up or else all you gains will disappear quickly. There is a grain of truth in this but it is not entirely true. FPHL, once established, is currently not able to be cured only controlled. That means that any treatment needs to be ongoing. Before you start treatment you are losing hair at a certain rate. On treatment you are hopefully no longer losing but gaining hair. If you stop treatment you do get an initial shed and then go back to losing hair at the same rate that you were before (all else being equal with your health). In the same way minoxidil gives you rapid gains the benefits are lost more rapidly than any other treatment. This is usually depressing.

First marketed as Rogaine and Regaine minoxidil comes in either as 2% standard solution or 5% extra strength. There are liquid and foam formulations.

HOW IT WORKS

Minoxidil works by reawakening dormant hair follicles and causing very fine pale hairs (vellus hairs) to thicken and darken into proper (terminal) scalp hairs. Studies show that hair weight and hair count increases by between 18-50% after six months of treatment with 5% minoxidil and then stabilise. These effects occur over 6-12 months and then stabilise.

DOES MINOXIDIL ONLY WORK ON THE CROWN?

There are two misconceptions about topical minoxidil. The first is that it only works on the crown. Minoxidil works wherever on the body it is applied. In the 1990s one New Zealand company exported a minoxidil product to Japan where it was used by some men to grow chest hair. What brought about this rumour was the FDA response to the first clinical trials of minoxidil (Rogaine).

Trials of 2% minoxidil and later 5% minoxidil were performed on men and the measurements and before and after photos were only performed on the crown for simplicity's sake. The Food and Drug Administration then decided to only allow Romaine and Regaine to be marketed as working on the crown. It works wherever it is applied. After using topical minoxidil be careful to wash your hands as it will promote hair growth on the back of the hands.

The second misconception is whether 5% minoxidil can be used on women. The answer is yes. The higher dose is more effective but there is also an increased incidence of the main side effect. In a small percentage of women, commonly South Asian, hair growth can occur on the side of the face or forehead, even with careful use⁽⁶⁾.

OTHER FORMS OF MINOXIDIL

Minoxidil now also comes in a 5% foam formulation. Foam is cosmetically much better than liquid minoxidil but, because some of it gets stuck on the hair, there is less scalp coverage. One study in women showed once daily 5% foam to be as effective as twice daily⁽⁷⁾.

It is possible to have a compounding pharmacist mix a 7%, 10% or 15% solution as well as combine minoxidil with retinoic or azelaic acid to make it more effective. These options can be quite pricey, \$150-\$200 a month compared to \$40-85 for 5% minoxidil alone. Ashley and Martin in particular supply the 7% minoxidil with retinoic acid. It is a point of difference which can be useful from a marketing point of view and some people feel they get better results on this formulation than with 5% minoxidil. But there is no medical evidence that it is any better than the 5%. My own preference is the addition of the DHT blocking compound azelaic acid to 5% minoxidil.

Another option to increase the efficacy of minoxidil is to use a needle roller just before application. Needle rollers can increase the absorption of minoxidil by about four times (ie 5% becomes the equivalent of about 20% minoxidil) and one roller will last at least six months.

Either of these options to make minoxidil more potent increase the chances of side effects.

SIDE EFFECTS

Side effects are related to either a skin reaction to the alcohol base of the liquid or to overdose of minoxidil. In tablet form minoxidil strongly lowers blood pressure so overdose can affect the heart. One guy successfully committed suicide by drinking a whole lot of minoxidil 5% and another was admitted to hospital with palpitations after using too much minoxidil on his body. Side effects are rare in men at standard doses but some people can get dizziness from low blood pressure or palpitations.

Do not let your cat lick minoxidil solution as minoxidil is toxic to cats. Keep your minoxidil out of reach of children. If they drink it they will develop low blood pressure. An infant in France was hospitalised after swallowing a teaspoon of 5% minoxidil liquid with low blood pressure and rapid pulse.

4. USE 2% KETOCONAZOLE SHAMPOO as your daily shampoo.

Ketoconazole is the active ingredient in Nizoral and Sebizole shampoo. It is an antifungal and used to treat the Malassezia fungus which is the cause of dandruff. Studies have shown that it also grows hair because it just happens to block the DHT receptor in the hair follicle.

This is one of those lucky findings in medicine, the same as with minoxidil. Both of these medicines were first used as oral tablets, minoxidil for blood pressure and ketoconazole as an antifungal.

Patients taking both of these found that they grew more hair. Because side effects from the tablets is common topical formulations were developed.

Both ketoconazole and zinc pyrithione (such as in Head and Shoulders) will help FPHL⁽⁵⁾ but ketoconazole is stronger.

It is important to note that the zinc in zinc pyrithione binds to topical minoxidil on the scalp, making both treatments less effective than they would be on their own. There has been no positive effect on hair loss shown from selenium sulphide containing shampoos such as Selsun.

The ketoconazole 2% strength available only at chemists is more effective than the 1% strength you can get at the supermarket. If you look at the bottle you will see that the dandruff dose is twice a week. For hair loss the ideal dose to use it every time you wash your hair, ideally every day.

Women may have an issue with the cosmetic effect of ketoconazole shampoo on the hair as it is a little drying. This can be managed with conditioners and conditioning products containing proteins or silicones.

5. CONSIDER HERBAL, MINERAL AND VITAMIN TREATMENTS

To be honest the science around these is not as strong as it is with drug treatment. However there is reasonable evidence to support the use of some supplements⁽⁴⁾. There are various blends available worldwide combining different supplements for which there is some evidence or theoretical chance of positive effect.

BENEFICIAL SUPPLEMENTS

The supplements I think provide useful benefit in MPHL and FPHL are:

- Herbal - Saw palmetto (at least 45% extract)
- Herbal - Beta sitosterol
- Herbal - Pygeum africanum
- Mineral - Zinc
- Mineral - Silica
- Mineral - Manganese
- Mineral - Iodine
- Vitamin - B6
- Vitamin - Biotin
- Vitamin - Niacin
- Vitamin - Pantothenic Acid
- Vitamin - B12
- Vitamin - Folate or folic acid
- Vitamin - PABA
- Vitamin - Tocotrienols
- Amino Acid - Cysteine
- Amino Acid - Taurine
- Fish protein and carbohydrate extract

Each of these ingredients has some modest degree of evidence to support it. By combining them it is possible to generate a noticeable change in the hair.⁽⁴⁾

AVOID SUPPLEMENTS WHICH HARM YOUR HAIR

Some supplements worsen FPHL. The most common is whey protein which causes insulin spikes (and therefore DHT spikes). If you wish to take a protein supplement use pea protein.

Creatinine was shown to raise blood DHT levels by 50% when tested on South African rugby players.

It should be obvious that testosterone boosters like tribulus or horny goat weed are to be avoided. And selenium overdose has caused hair loss in the USA. While not strictly a supplement mercury from deep sea predator fish like swordfish and tuna can lead to hair loss.

OTHER SUPPLEMENTS?

There are a large number of herbal remedies and plant and algae extracts that have been shown to have a small effect on the hair follicle either in the laboratory or clinically. Some have even been shown to be as effective as 2% minoxidil (the lowest level of well proven effectiveness).⁽⁶⁾ If you would like to try something along these lines then try it. But don't give up on the proven remedies while you give an untested remedy a go. It is better to add in your new therapy as an extra than to try to regain the ground you have lost if the new therapy does not work as well as you were led to believe.

6. CONTROL YOUR INSULIN LEVELS AND CONTROL DHT. EAT TO SAVE YOUR HAIR (and maybe your life).

Many medical conditions are due to the effect of one or more elements of the environment on the body (think cigarettes and lung cancer). We all vary in our genetic susceptibility to these environmental factors (not every smoker gets lung cancer) and what effects we get (smoking also causes emphysema, heart attacks and bladder cancer).

As I stated at the beginning of this booklet there is good evidence suggesting that the environmental trigger for FPHL is the effect of the modern diet on the hormone insulin. There are three good reasons why you should take control of your diet:

- Controlling insulin levels through controlling the glycaemic index of your food will reduce DHT levels and therefore slow hair loss. If you suffer from acne or excess body hair it will help these conditions as well.
- A healthy diet low in processed carbohydrates and packed with fresh vegetables is generally good for all of us.
- Men and women who lose their hair have more heart attacks and strokes than those with a full head of hair. Some bodies are less able than others to take the strain of the modern diet with its abundance of processed carbs. The resulting high insulin levels cause hair loss, weight gain, gout, high blood pressure and an early death from a heart attack or stroke. Avoiding this

sequence of events may save your life. My own best friend at school was one of those guys who lost his hair in his late teens (there was not much in the way of treatment in the 80s). He got fat, smoked and died of a heart attack at 36 (!) Don't let it happen to you.

CONTROL DHT BY CONTROLLING GI

You must eat to avoid high blood glucose levels. No blood glucose surge means no insulin spike and no DHT spike (see page one of this report). The measure of how quickly different foods raise blood glucose levels is the Glycaemic Index (GI). Avoid high GI foods. Google the GI of your food. So what foods to avoid? Basically processed carbohydrates. Follow this advice:

- don't overeat. An intake of too many calories raises insulin levels.
- avoid sugar obviously as well as honey, molasses, golden syrup, coconut sugar
- avoid all potatoes and kumara. Maori potatoes (those little purple ones) are OK
- avoid corn, sweetcorn, parsnips and beetroot
- avoid all bread except for wholegrain bread such as Vogels
- avoid all rice and rice flour products except for brown rice
- avoid snack treats like potato chips, corn chips, popcorn and pretzels
- avoid modern, high sugar and low fibre fruit varieties like navel oranges, seedless grapes, modern apples varieties like Gala, Jazz and Pink Lady as well as ripe bananas, pineapples and raisins
- avoid most breakfast cereals (especially Weet Bix). It is OK to eat Special K, bran, porridge and most muesli (but watch the sugar content).

So what can you eat?

- good carbohydrate choices are brown rice, quinoa and amaranth
- eat more salads and any fruit and vegetables that are not listed above
- fish, some meat, egg and cheese

Making this change is hard. Our planet is not geared up to provide everyone with this diet and it is hard to find this food easily in our shops.

Those that have the most success in making the change are those that decide to go low carb. Some people go Paleo. However you decide to implement the changes good luck.

7. AN EXPANDING ABDOMEN WILL ACCELERATE YOUR HAIR LOSS

Many women who develop hair loss around the time of the menopause find their abdomen expanding at the same time. These women's biochemistry has been ravaged by the modern food industry in three ways:

1. Elevated insulin levels from processed carbs. This directly elevates his DHT levels and she loses hair.

2. Too much insulin forces her abdominal fat cells to suck in nutrients and expand. As they get bigger they interfere with normal insulin function, a situation known as insulin resistance. The pancreas then has to produce even more insulin in order to bring down glucose levels. More insulin means more DHT and less hair.
3. Those chronically high insulin levels cause the sort of damage through the body we have been talking about, most seriously to the heart.

8. RED LIGHT THERAPY

Red light therapy and Skin Needling are the two treatment modalities which have advanced from being haphazard therapy with variable success to become proven medical therapy since the year 2000.

The rise of Chinese manufacturing has led to the availability of cheap quality materials, including laser diodes and LEDs. This has meant the ready availability of devices with which to advance medical science.

Red light therapy, whether delivered by laser or LED is no longer alternative but mainstream. However medical science has shown that not just any red light is beneficial. The wavelength needs to be somewhere in the range of 630-680 nanometers and the dose of red light needs to be in the correct range. Both too much and too little red light will give poor results.

For these reasons it is crucial that you check the results of any clinical trials of a red light device you are planning to buy. This is how doctors test how the device behaves in real patients. There have been proper peer reviewed randomised, placebo controlled trials on only three home devices for hair growth. You are taking an unnecessary risk if you buy any other device.

1. HairMax Laser Comb - 128 men, 148 women. Placebo group grew 3% more hair, treatment group grew 13% more hair (10% more than placebo).
2. Oaze Laser/LED Helmet - 26 men 14 women. Placebo group lost 2% hair, treatment group grew 17% more hair (19% more than placebo).
3. iGrow Laser/LED Helmet. 41 men in male study. Placebo group grew 32% more hair, treatment group grew 67% more hair (39% more than placebo). 42 women in female study. Placebo group grew 11% more hair, treatment group grew 48% more hair (37% more than placebo).

The results support the use of the iGrow helmet as the best option. The cost is \$NZ850 or \$US700. The time investment is 25 minutes every second day. The above results were seen after four months.

Some people feel some itch or headache when they start using red light therapy but no other side effects have been noted. Light therapy is a legitimate drug free option for those who cannot or choose not to take drugs.

9. SKIN NEEDLING

The second modality perfected since 2000 is skin needling. The basic idea is that a group of needles will create tiny wounds in the skin. The growth factors and other messenger molecules the damaged skin secretes as part of wound healing cause dormant hair follicles to reawaken and follicles producing thin hairs to grow thicker hair.

This concept has been in use for hundreds, possibly thousands of years by practitioners of acupuncture. The cherry blossom hammer is a small hammer with acupuncture needles used to produce multiple small puncture wounds in the scalp. This level of technology (needles too thick, not enough holes) gave weak and inconsistent results but, like light therapy, had enough success to keep people trying.

Once again the rise of Chinese manufacturing has rejuvenated this field. Cheap needle roller devices and motorised Dermapen technology has enabled practitioners to be able to treat scalp (and skin) with very large numbers of very thin needle holes very effectively. As a result the wounds are much tinier but more numerous than in the past and the amount of growth factors produced is well in excess of what is necessary to heal the tiny wound. That excess is available to stimulate hair growth (and improve facial and body skin).

Current state of the art is the Dermapen. 11 needles are inserted at a rate of 7 times a second, similar to a tattoo gun. Needle depth can be adjusted in order to balance the beneficial effects of deeper needling against the increased side effects of pinpoint bleeding, redness, swelling and fluid ooze after more heavy procedures. This is an in clinic procedure.

More convenient is a home needle roller. The current best model is the 1.5mm depth 540 titanium needle roller with tapered needles. If you choose to purchase a needle roller make sure that this is the model you buy.

And results? As well as the anecdotal results there has been one very good study out of Mumbai in India⁽⁹⁾. 100 men with MPHL were started on twice daily minoxidil and half were asked to attend the clinic once a week for the nurse to administer their needle roller treatment.

At the end of three months the minoxidil only group had 18% more hair while the minoxidil plus weekly skin needle treatment had 90% more hair. After the trial was completed those men were transferred to oral dutasteride. At the end of 2 years all but one of the men had maintained their new growth. There are no clinical trial data yet on women but medical experience has not shown any difference in response to needle rollers between men and women. Everyone should consider this treatment.

10. COSMETIC OPTIONS

These options include:

1. Thickening keratin fibres from wool like SureThik, Nanogen and Toppik or messy cotton ones like Caboki.

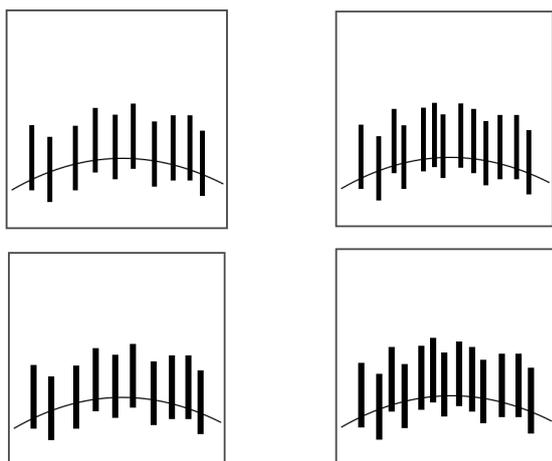
2. Paint the scalp products like Dermatch. Used a lot in TV studios.
3. Thickening conditioners, hairsprays and other products .
4. Hair Extensions.
5. Hairpieces.
6. Wigs. A subsidy is available from WINZ with a letter from your doctor.

Cosmetic products can give the appearance of thicker hair and do a lot to enhance the confidence of thousands of NZers and you would never know.

Consider the following illustrations as to why this can help. The first is a representation of an area of scalp and ten hairs. The second photo has is 30% more hair (13) of the same thickness. This is the sort of result someone might get from topical minoxidil.

The third photo is 10 hairs but each is 30% thicker, the sort of result you might get from an effective thickening treatment. The last is 13 hairs which are 30% thicker i.e. the best of both therapies and the sort of result a man who responds very well to finasteride might get.

What they show is hair thickness and hair number are both important and anything we can do to improve both will help frame the face.



SMALL KERATIN FIBRES

At \$49 for a 3-4 month supply they can be a good camouflage option. You sprinkle the fibres from the little shaker and the static cling means they form tiny branches on the hair follicles and help to fill the gaps.

THICKENING GELS

The best is Pantene Age Defy. It is applied after washing and before drying the hair. A series of drops are applied to the scalp (five drops in each of five parts) and then spread with the fingers out onto the hair. It may be a bit too thick for shorter hair. A better option in this situation is SureThik Thickening Mist.

These products slowly coat the hair and make it look like your hair is thicker. There is more information on caring for weathered and fragile hair on my website.

11. BOTOX AND PLATELET RICH PLASMA

These are emerging therapies. Botox has been shown to increase the amount of hair by more than 25%. The problem is that the necessary dose is 150 units (at a cost of \$1700-2000) very 3-6 months. I have been undertaking trials into lower doses of Botox for the past two years. Watch this space.

PRP is an exciting new development but still a little experimental. The concentrated platelets in PRP produce high levels of growth factors, the little messengers that tell the healing cells to do their thing. Together with stem cells, growth factors are the great new frontier of medical treatment.

In clinical trials some men and women have achieved amazing results (up to 120% more hair) but the results vary a lot from person to person and from clinic to clinic. I have had some excellent results but also some mediocre ones and it is impossible to know who will get which result beforehand.

12. MINIMISE STRESS AND CONTROL CORTISOL LEVELS

Stress aggravates hair loss. Stress has multiple hormonal effects on the body but the big one is an increase in levels of the stress hormone cortisol.

Cortisol leads to an increase in substance P levels around the hair follicles of the scalp. Together cortisol and substance P act to:

- slow the rate of hair growth
- switch follicles from the growing anagen phase to the dormant telogen phase
- lead to the release of free radicals which damage hair follicles as well as the pigment producing cells (this is how stress turns hair grey).

It's hard to reduce stress levels when a major cause of stress is your hair loss! Some helpful ways:

- Get more sleep. Make sure of this. After a healthy diet this is the number one lifestyle factor that will improve your hair.
- Exercise.
- Listen to music.
- Spend more time with your family and pets.
- Try meditation.
- Socialise and spend time with your extended family.
- Breathe properly. Breathing through the diaphragm rather than the chest wall muscles calms cortisol. While seeing a respiratory physio or taking a yoga class help the most some manage with a book or internet search of hyperventilation. Some get enough help from this exercise. First slowly breathe in through your nose for a count of five. Hold your breathe for a count of five. Then open your mouth and let all that air out.
- Try yoga.
- Eat chilli which helps block substance P.
- Give of your time and money.

- Express gratitude for at least three good things in your life every day. Balance this by trying to think of three lessons or experiences you had recently from which you have learnt a way to be a better person.
- Reduce your commitments. Don't spread yourself too thin.

13. CULTIVATE A POSITIVE ATTITUDE

It can seem hard to remain positive when life has dealt you the MPHL card. Even more so now that you've been told that your hair loss is a sign of increased risk of diabetes and heart disease.

But we've only got one life and each day that you spend isolating yourself from life is a day you'll never get back. So make a decision as to whether you want to start treatment or not and get going with your life. Its shorter than you think.

You are not just your hair:

- Focus on other areas of your appearance.
- Develop your relationships. An emotionally rich home and family life and close friendships will give you more satisfaction than your hair ever will.
- Travel.

Studies show that people with a more positive attitude live longer, healthier, happier, richer lives than those who don't. Studies also show that people with a negative attitude tend to have a more accurate, objective view of reality than people with a positive attitude. It does not do them any good though, they still are less happy, less healthy and have fewer friends than their positive peers.

Where to look? There are many people who can help. Tony Robbins or Dr Libby can be a good start.

14. COMBINATION TREATMENT IS THE WAY TO GO

Studies show that combination treatments are always more effective than the same treatments used alone⁽⁶⁾. An organised programme, followed consistently and for long enough, will always work better than experimenting with treatment in a haphazard manner.

I see a lot of people with hair loss. After a clinical assessment and a discussion I find people fall into a few groups:

1. One group is sure there is some hidden underlying cause of their hair loss. They have seen multiple people about their hair loss and often spent thousands. They may or may not try a limited range of treatment options for a short period of time. They then visit the next person on their list and I do not see them again. I always hope things have worked out for the best with them but suspect they are continuing a frustrating expensive journey.

2. A big group give effective treatment a go for a while but tend to stop for no good reason. Sometimes they sheepishly get back in touch and admit they have fallen off the wagon. I suspect this is the same group who join a gym with high hopes but soon stop going.
3. Then there is the group who choose a programme and stick to it, year in and year out. This is the group that get the results.

Other points to note;

1. Give treatments a long enough chance before you decide whether they work or not. Hair grows at about one centimetre a month. It can take a while for treatment to reverse your hair loss and 6-12 months to be sure you are responding.
2. Be sure you can tell whether treatment is working or not. It can be hard to tell if there is any improvement as our memories are not 100%. Make sure you take good photos. Over the years I have had people swear black and blue that they have had no improvement after a year but when we look at their before and after photos the improvement is obvious.
3. Start now. Combination treatment is excellent at preserving hair and slow and only weak at regrowing it - so don't leave it too long.

You now know what you can do to save and increase your hair but there is time, money and hassle involved. Results are slow to show up and the road to results has its ups and downs - bad hair days from humidity and scalp oil changes, shedding after illness and with the seasons all can make you downhearted.

And if you do give up at the first obstacle or stop treatment because you run out and are too busy to replenish your supplies don't say the treatment "did not work". Admit that you gave up.

OK NOW GET ON WITH YOUR LIFE!

That's my spiel. You know what you can do about your hair loss so decide to own the problem, choose a regimen and stick to it.

And don't just focus on your hair. Grow in other ways, hit the gym, learn new skills, get rich, travel, cultivate a fascinating personality and make the most of this one life we seem to have been given.

Or do nothing. Accept your hair loss issue and move on. At the end of the day the only one who really cares which option you choose is you. Others will accept and love you as you are.

What you must not do is endlessly ruminate over what you should do but never take action. Either choose something and do it or choose not to act and move on. Don't get stuck procrastinating over you hair while life passes you by.

And if you do decide to take action STICK TO IT. Results, like hair loss itself, take time. Commit for at least six months and then reassess. Accept that you will have good

days and bad days, and weeks and months but that you are doing the best that can be done. And that is winning.

AND THE FUTURE?

Hair cloning and stem cell treatment is progressing. The Japanese seem the most advanced in this area.

Next level growth factors (after PRP) are in development. Prostaglandins are another promising area after the effect of latanoprost and bimatoprost on eyelashes has been noted.

But if you are reading this you need to make a decision about treatment now. You can wait for these better treatments if you like but it may take 10 years for something really good to arrive. In the meantime your hair loss will continue

YOU'VE READ ABOUT THE SCIENCE BEHIND THE TREATMENTS - WHAT NOW?

You've just learned a little about what scientific hair loss treatment is all about. This is the best and most up to date summary I can give you. If you want to have a browse on the internet remember to be a little skeptical. There have been more scams in the field of hair loss than any other branch of medicine. Don't be another victim. Check their references (and check mine - I give them to you).

If you decide you want to prevent and reverse hair loss and want to organise your own treatment your next step is to see your doctor.

Or you can see me. It'll cost you \$100 but you'll get \$50 of that back off the cost of any treatment you purchase. You will also get:

1. A sympathetic ear, an assessment and an accurate diagnosis. I take hair loss seriously. Doctors in general have been a little uninterested and unsympathetic with hair loss and have left a gap of care which overpriced Hair Clinics have been happy to fill.
2. A choice of personalised treatment programmes and prices.
3. The opportunity to enrol in our haircare programme. We organise your treatment as well as unlimited free phone, email and face to face support.

Interested? See me, Dr Paul Nola at my office in Ponsonby.

Ponsonby Cosmetic Medical Clinic
Level 1 63 Ponsonby Rd Ponsonby Auckland
P. 3604078
E. paul@hairdoctor.co.nz

And Good Luck whatever you decide to do.

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